

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 July 2005 (14.07.2005)

PCT

(10) International Publication Number  
**WO 2005/062732 A2**

(51) International Patent Classification: **Not classified**  
(21) International Application Number:  
PCT/SG2003/000298

(22) International Filing Date:  
31 December 2003 (31.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 20 Biopolis Way, #07-01 Centros, Singapore 138668 (SG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHIN, Po, Shin, Francois** [SG/SG]; Blk 940 Hougang St 92 #13-19, Singapore 530940 (SG). **LEI, Zhongding** [CN/SG]; Blk 26 Bukit Batok St 52 #20-03, Singapore 659247 (SG). **PENG, Xiaoming** [CN/SG]; Blk 278 Toh Guan Road #12-179, Singapore 600278 (SG).

(74) Agent: **WATKIN, Timothy, Lawrence, Harvey**; Lloyd Wise, Tanjong Pagar, P.O. Box 636, Singapore 910816 (SG).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

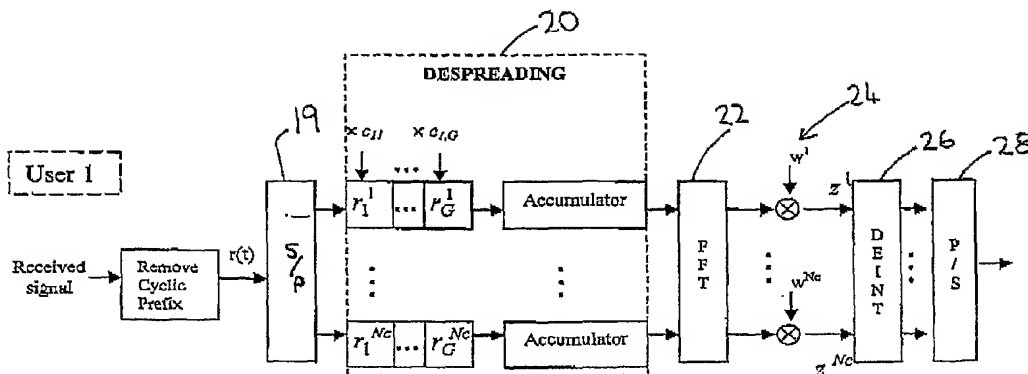
(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

[Continued on next page]

(54) Title: A VARIABLE SPREADING FACTOR-ORTHOGONAL FREQUENCY AND CODE DIVISION MULTIPLEXING (VSF-OFCDM) SYSTEM, A RECEIVER FOR USE THEREIN AND A METHOD OF PROCESSING RECEIVED SIGNALS IN SUCH A SYSTEM



A Pre-despreading receiver for VSF-OFCDM systems with time domain spreading

(57) Abstract: A variable spreading factor-orthogonal frequency and code division multiplexing (VSF-OFCDM) system and receiver for use therein has a sequence extension remover for removing a predetermined number of chips from the received signal to form a modified signal, and a first converter for converting the modified signal from a serial sequence to a parallel sequence. A despreader is coupled to the first converter for despreading the parallel sequence to derive a group of symbols. An orthogonal transform block, such as a Fast Fourier Transform block is coupled to the despreader to transform the symbols from the time domain to the frequency domain. An equalizer block is coupled to the transform block for equalizing the transformed signal to reduce channel distortion. A deinterleaver block is coupled to the equalizer block to form a deinterleaved signal. The deinterleaved signal is then converted from a parallel sequence to a serial sequence.



**Published:**

— without international search report and to be republished  
upon receipt of that report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*